FIG.1 PRIOR ART

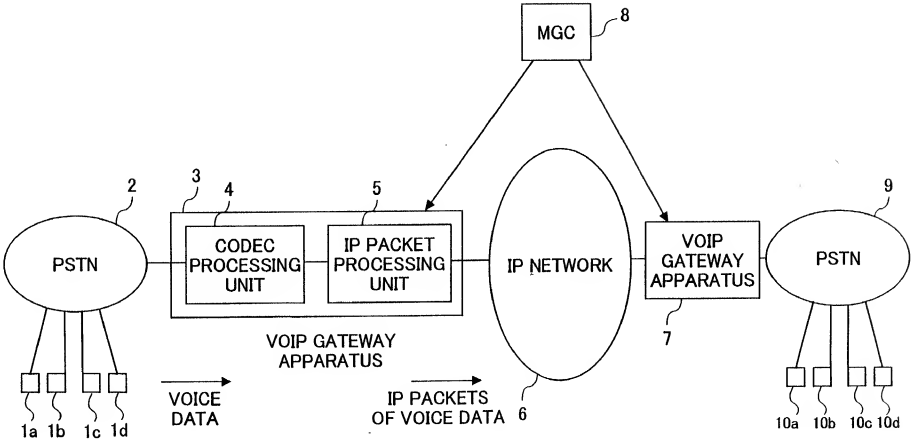


FIG.2

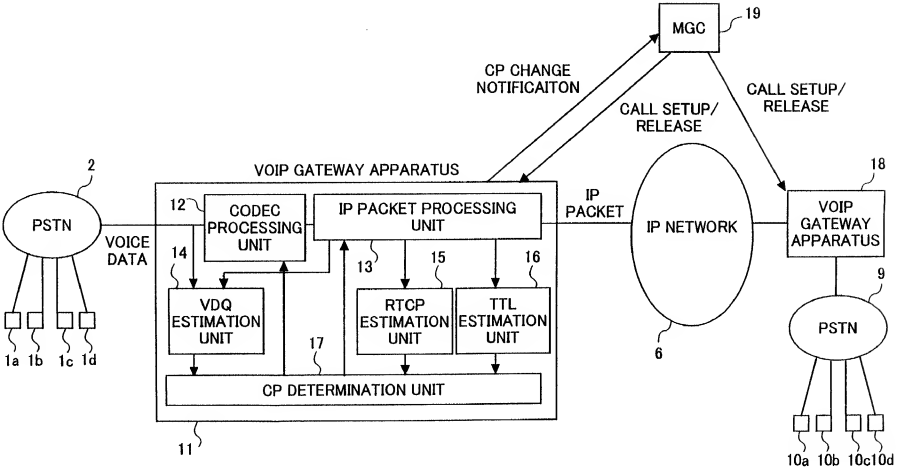


FIG.3

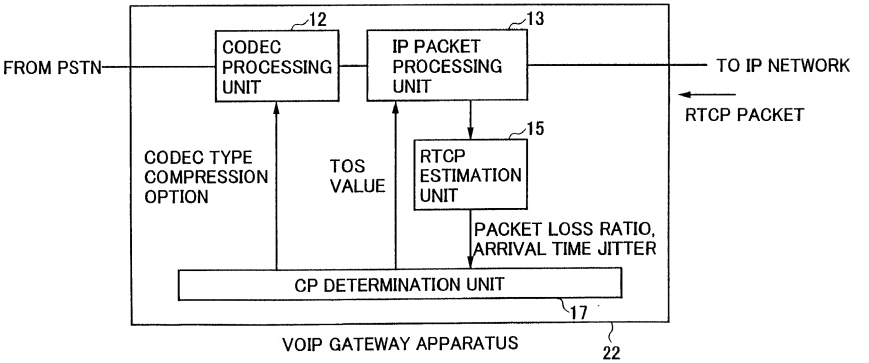

12
13
CODEC PROCESSING UNIT
IP PACKET PROCESSING UNIT
FROM PSTN
TO IP NETWORK
RTCP PACKET
15
RTCP ESTIMATION UNIT
CODEC TYPE COMPRESSION OPTION
TOS VALUE
PACKET LOSS RATIO, ARRIVAL TIME JITTER
CP DETERMINATION UNIT
17
VOIP GATEWAY APPARATUS
22

FIG.4

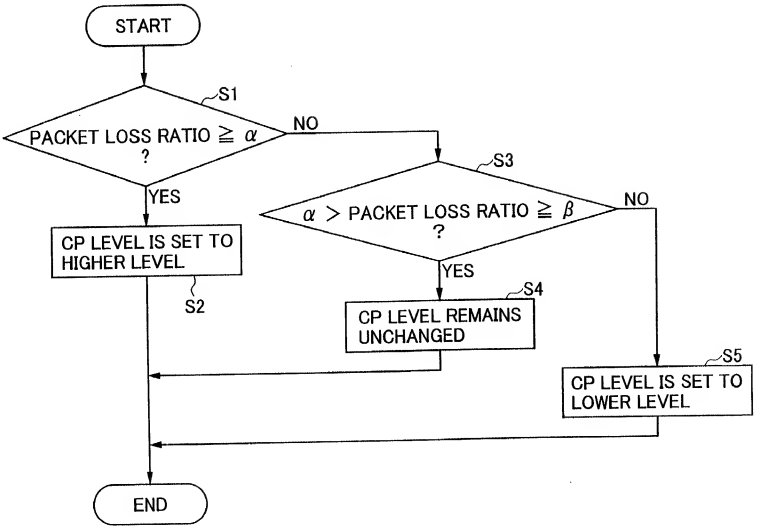

START
S1
PACKET LOSS RATIO ≧ α ?
NO
YES
S3
α > PACKET LOSS RATIO ≧ β ?
NO
YES
CP LEVEL IS SET TO HIGHER LEVEL
S2
S4
CP LEVEL REMAINS UNCHANGED
S5
CP LEVEL IS SET TO LOWER LEVEL
END

FIG.5

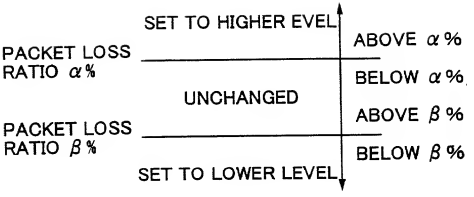

SET TO HIGHER EVEL
ABOVE α %
PACKET LOSS RATIO α %
BELOW α %
UNCHANGED
ABOVE β %
PACKET LOSS RATIO β %
BELOW β %
SET TO LOWER LEVEL

FIG.6

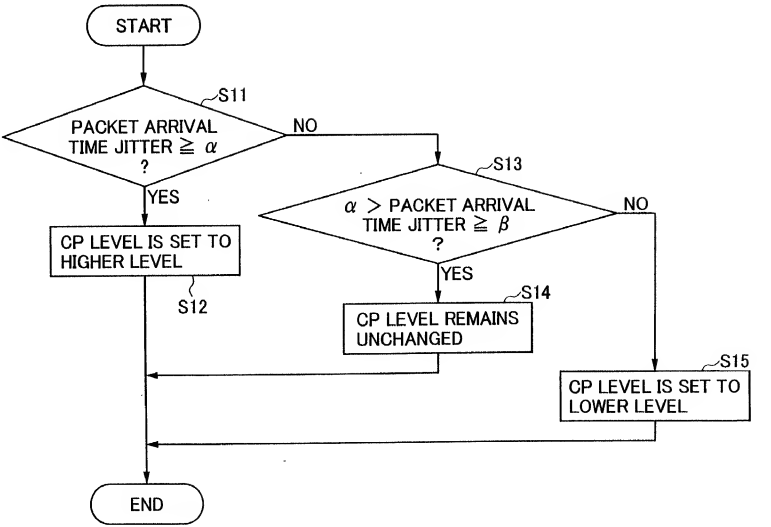

START
S11
PACKET ARRIVAL TIME JITTER ≧ α ?
NO
YES
S13
α > PACKET ARRIVAL TIME JITTER ≧ β ?
NO
YES
CP LEVEL IS SET TO HIGHER LEVEL
S12
S14
CP LEVEL REMAINS UNCHANGED
S15
CP LEVEL IS SET TO LOWER LEVEL
END

FIG.7

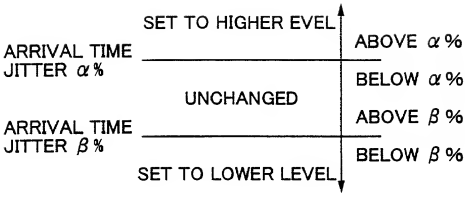

SET TO HIGHER EVEL
ARRIVAL TIME JITTER α%
ABOVE α%
BELOW α%
UNCHANGED
ARRIVAL TIME JITTER β%
ABOVE β%
BELOW β%
SET TO LOWER LEVEL

FIG.8A

| LEVEL | PACKET DISCARDING PRIORITY LEVEL | MEANING |
|---|---|---|
| 1 | PD PRIORITY LEVEL 1 | PRIORITY LOW (DISCARD LATER) |
| 2 | PD PRIORITY LEVEL 2 | |
| 3 | PD PRIORITY LEVEL 3 | |
| 4 | PD PRIORITY LEVEL 4 | |
| 5 | PD PRIORITY LEVEL 5 | PRIORITY HIGH (DISCARD FIRST) |

FIG.8B

| LEVEL | PACKET TRANSMISSION PRIORITY LEVEL | MEANING |
|---|---|---|
| 1 | PT PRIORITY LEVEL 1 | PRIORITY LOW (TRANSMIT LATER) |
| 2 | PD PRIORITY LEVEL 2 | |
| 3 | PD PRIORITY LEVEL 3 | |
| 4 | PD PRIORITY LEVEL 4 | |
| 5 | PD PRIORITY LEVEL 5 | PRIORITY HIGH (TRANSMIT FIRST) |

FIG.8C

| LEVEL | CODEC TYPE |
|---|---|
| 1 | G. 723. 1 ( 5.3kbps ) |
| 2 | G. 723. 1 ( 6.3kbps ) |
| 3 | G. 729a ( 8kbps ) |
| 4 | G. 726 ( 32kbps ) |
| 5 | G. 711 ( 64kbps ) |

FIG.9

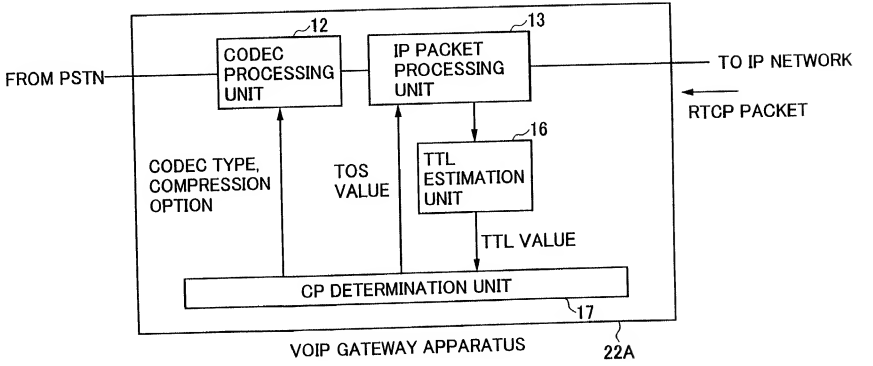

12
CODEC PROCESSING UNIT
13
IP PACKET PROCESSING UNIT
FROM PSTN
TO IP NETWORK
RTCP PACKET
16
TTL ESTIMATION UNIT
CODEC TYPE, COMPRESSION OPTION
TOS VALUE
TTL VALUE
CP DETERMINATION UNIT
17
VOIP GATEWAY APPARATUS
22A

FIG.10

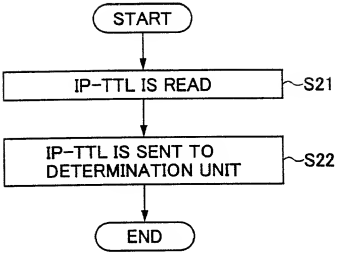

START
IP-TTL IS READ
S21
IP-TTL IS SENT TO DETERMINATION UNIT
S22
END

FIG.11

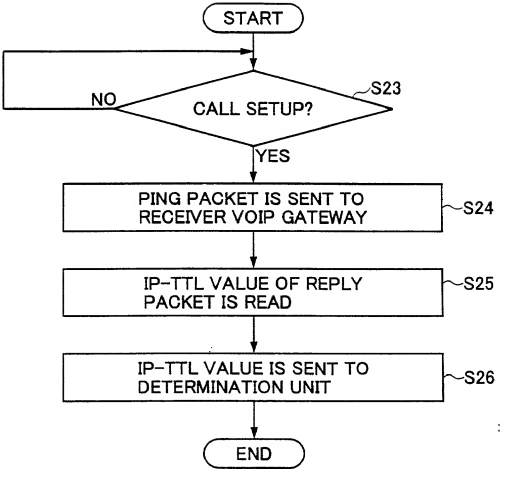

START
CALL SETUP?
NO
S23
YES
PING PACKET IS SENT TO RECEIVER VOIP GATEWAY
S24
IP-TTL VALUE OF REPLY PACKET IS READ
S25
IP-TTL VALUE IS SENT TO DETERMINATION UNIT
S26
END

FIG.12

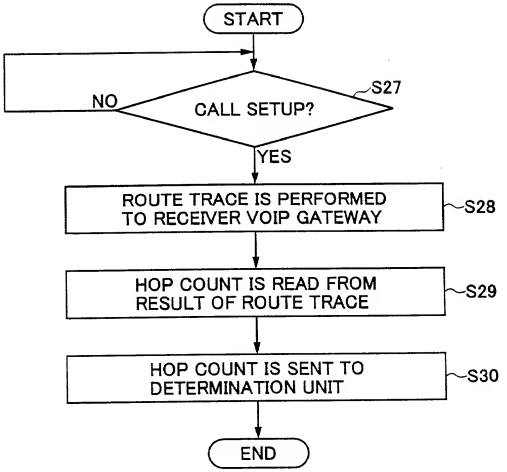

START
CALL SETUP?
S27
NO
YES
ROUTE TRACE IS PERFORMED TO RECEIVER VOIP GATEWAY
S28
HOP COUNT IS READ FROM RESULT OF ROUTE TRACE
S29
HOP COUNT IS SENT TO DETERMINATION UNIT
S30
END

FIG.13

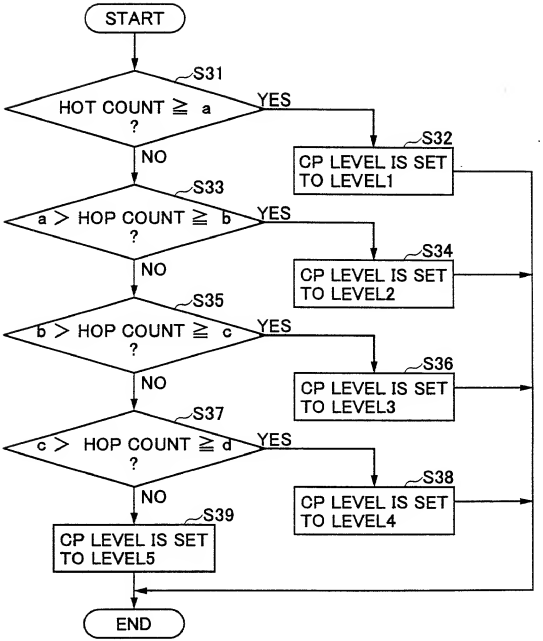

START
S31
HOT COUNT ≧ a ?
YES
NO
S32
CP LEVEL IS SET TO LEVEL1
S33
a > HOP COUNT ≧ b ?
YES
NO
S34
CP LEVEL IS SET TO LEVEL2
S35
b > HOP COUNT ≧ c ?
YES
NO
S36
CP LEVEL IS SET TO LEVEL3
S37
c > HOP COUNT ≧ d ?
YES
NO
S38
CP LEVEL IS SET TO LEVEL4
S39
CP LEVEL IS SET TO LEVEL5
END

FIG.14

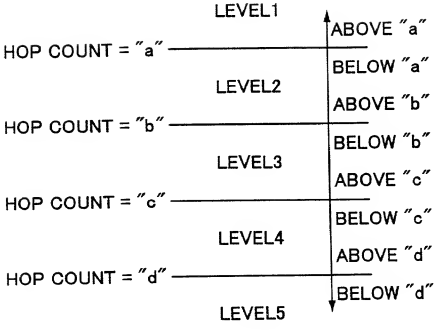
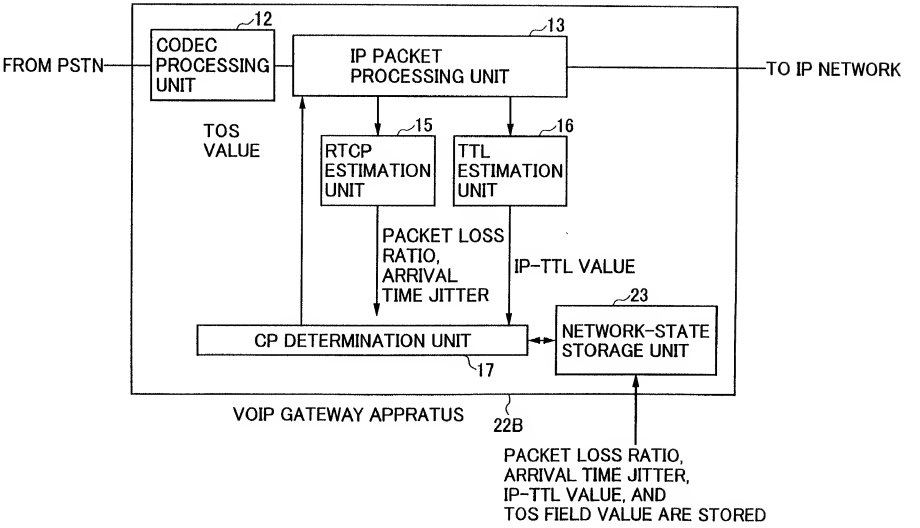


FIG.15



# FIG.16

| PACKET LOSS RATIO | ARRIVAL TIME JITTER | IP-TTL VALUE | TOS FIELD VALUE | |
|---|---|---|---|---|
| a | b | c | d | DESTINATION 1 |
| | | | | DESTINATION 2 |
| | | | | DESTINATION 3 |
| | | | | DESTINATION 4 |
| | | | | DESTINATION 5 |
| | | | | DESTINATION 6 |
| | | | | DESTINATION 7 |

FIG.17

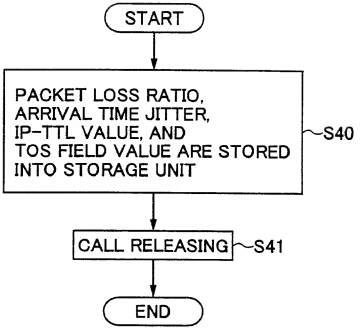

START
PACKET LOSS RATIO, ARRIVAL TIME JITTER, IP-TTL VALUE, AND TOS FIELD VALUE ARE STORED INTO STORAGE UNIT
S40
CALL RELEASING
S41
END

FIG.18

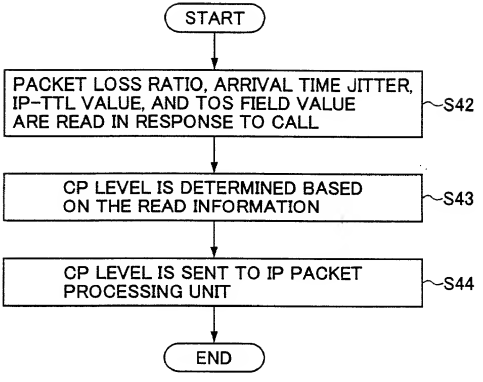

START
PACKET LOSS RATIO, ARRIVAL TIME JITTER, IP-TTL VALUE, AND TOS FIELD VALUE ARE READ IN RESPONSE TO CALL
S42
CP LEVEL IS DETERMINED BASED ON THE READ INFORMATION
S43
CP LEVEL IS SENT TO IP PACKET PROCESSING UNIT
S44
END

FIG.19

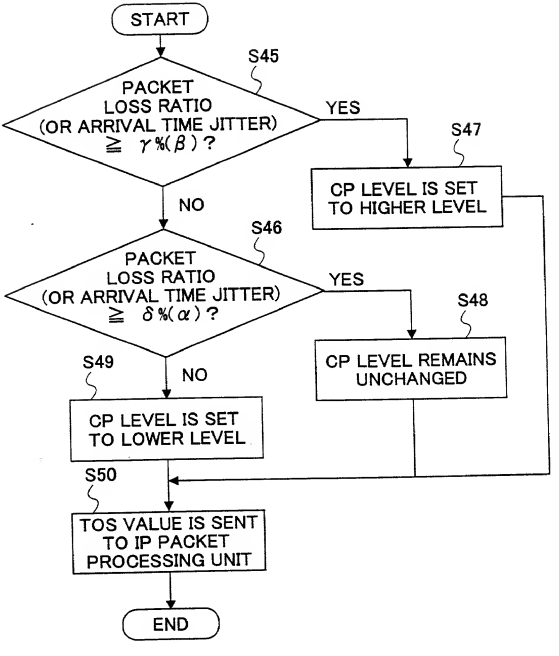

START
S45
PACKET LOSS RATIO (OR ARRIVAL TIME JITTER) ≧ γ%(β)?
YES
S47
CP LEVEL IS SET TO HIGHER LEVEL
NO
S46
PACKET LOSS RATIO (OR ARRIVAL TIME JITTER) ≧ δ%(α)?
YES
S48
CP LEVEL REMAINS UNCHANGED
S49
NO
CP LEVEL IS SET TO LOWER LEVEL
S50
TOS VALUE IS SENT TO IP PACKET PROCESSING UNIT
END

FIG.20

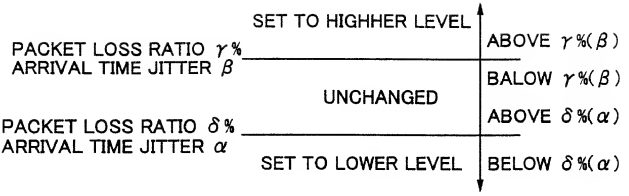


FIG.21

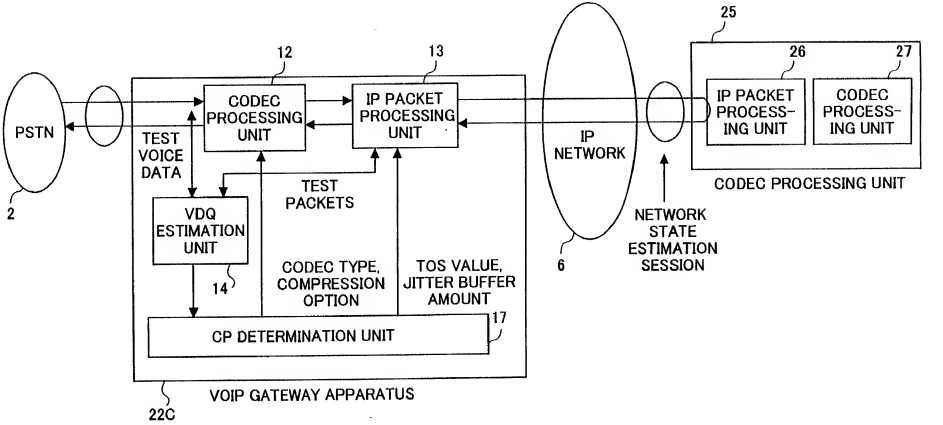

25
12
13
26
27
PSTN
CODEC PROCESSING UNIT
IP PACKET PROCESSING UNIT
IP PACKET PROCESS-ING UNIT
CODEC PROCESS-ING UNIT
IP NETWORK
TEST VOICE DATA
TEST PACKETS
CODEC PROCESSING UNIT
2
VDQ ESTIMATION UNIT
NETWORK STATE ESTIMATION SESSION
14
CODEC TYPE, COMPRESSION OPTION
TOS VALUE, JITTER BUFFER AMOUNT
6
17
CP DETERMINATION UNIT
VOIP GATEWAY APPARATUS
22C

FIG.22

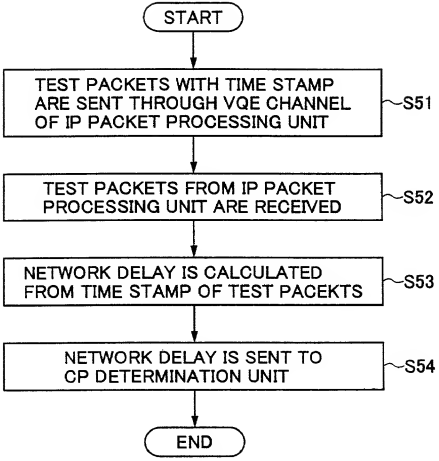

START
TEST PACKETS WITH TIME STAMP ARE SENT THROUGH VQE CHANNEL OF IP PACKET PROCESSING UNIT
S51
TEST PACKETS FROM IP PACKET PROCESSING UNIT ARE RECEIVED
S52
NETWORK DELAY IS CALCULATED FROM TIME STAMP OF TEST PACEKTS
S53
NETWORK DELAY IS SENT TO CP DETERMINATION UNIT
S54
END

FIG.23

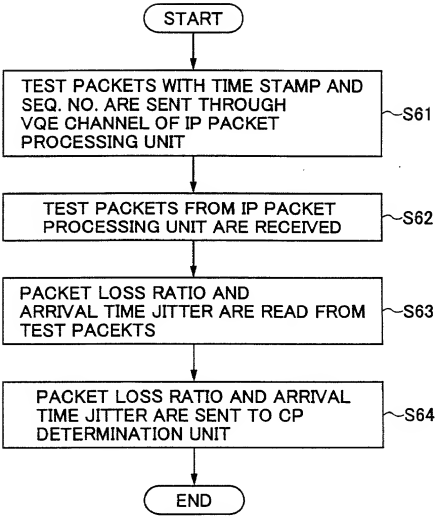

START
TEST PACKETS WITH TIME STAMP AND SEQ. NO. ARE SENT THROUGH VQE CHANNEL OF IP PACKET PROCESSING UNIT
S61
TEST PACKETS FROM IP PACKET PROCESSING UNIT ARE RECEIVED
S62
PACKET LOSS RATIO AND ARRIVAL TIME JITTER ARE READ FROM TEST PACEKTS
S63
PACKET LOSS RATIO AND ARRIVAL TIME JITTER ARE SENT TO CP DETERMINATION UNIT
S64
END

FIG.24

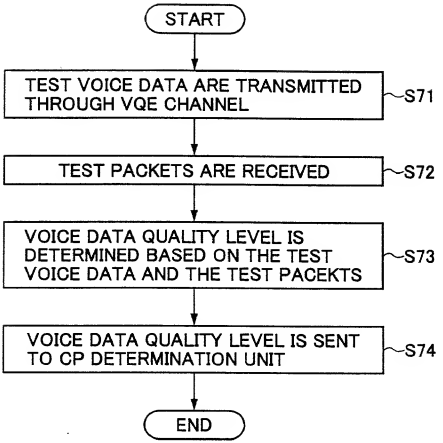

START
TEST VOICE DATA ARE TRANSMITTED THROUGH VQE CHANNEL
S71
TEST PACKETS ARE RECEIVED
S72
VOICE DATA QUALITY LEVEL IS DETERMINED BASED ON THE TEST VOICE DATA AND THE TEST PACEKTS
S73
VOICE DATA QUALITY LEVEL IS SENT TO CP DETERMINATION UNIT
S74
END

FIG.25